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MOORHEAD BASELINE INVENTORY — WILDLIFE

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MOORHEAD BASELINE INVENTORY — WILDLIFE

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Prepared by
Miles City District Office
Miles City, Montana

CONTENTS

INTRODUCTION 1
Description of the Study Area 1
Climate 4

METHODS 5
Game Species 5
Nongame Species 5
Birds 5
Small Mammals 5
Prairie Dogs 5
Furbearers 5
Raptors 5
Reptiles and Amphibians 5
Endangered Species 5

RESULTS AND DISCUSSION 11
Game Species 11
Mule Deer 11
Antelope 14
Grouse 14
Ring-Necked Pheasant and Hungarian Partridge 14
Merriam's Turkey 18
Waterfowl 18

Nongame Species 18
Raptors 18
Reptiles and Amphibians 21
Birds 21
Mammals 23

LITERATURE CITED 25

APPENDICES
A. Birds Identified on the Moorhead Study Area 27
B. Small Mammal Seasonal Trapping Results 29
C. Trapping Results (9 Mammal Species) 31

LIST OF FIGURES

Figure 1. Moorhead Coal Field 2
Figure 2. Vegetation of the Moorhead Study Area 3
Figure 3. Pheasant Crow Count Route 6
Figure 4. Bird Census Routes 7
Figure 5. Small Mammal Trapping Stations 8
Figure 6. Prairie Dog Town Locations 9
Figure 7. MDFWP Deer Hunting District #740 12
Figure 8. Distribution of Mule Deer Observations 13
Figure 9. MDFWP Antelope Hunting District #742 15
Figure 10. Distribution of Antelope Observations 16
Figure 11. Grouse Dancing Grounds and Sagegrouse Wintering Area 17
Figure 12. Merriam's Turkey Observations 19
Figure 13. Waterfowl Use Areas 20

LIST OF TABLES

Table 1. Mule Deer Population Characteristics 11
Table 2. Seasonal Use of Habitat by Mule Deer 11
Table 3. Antelope Seasonal Use of Habitat 14
Table 4. Sharptail and Sage Grouse Arena Locations 18
Table 5. Reptiles and Amphibians Observed on the Moorhead Area 21
Table 6. Most Commonly Identified Birds From the Bird Routes 21

INTRODUCTION

The Powder River Resource Area (PRRA), a management unit of the Miles City District of the Bureau of Land Management (BLM), contains large expanses of recoverable subbituminous and lignite coal. At the time of this publication, locations within the PRRA have been identified by the coal industry as high interest areas for leasing federally owned coal. The Moorhead Coal Lease Recommendation Area (LRA) is one of those areas (Figure 1). This LRA contains more than 90% federally owned minerals, thus, development depends upon a decision to lease the federal coal.

The BLM, a multiple use agency in the Department of Interior, is mandated with the responsibility of managing Federal minerals. However, leasing decisions are influenced by other resource values which may overlie those Federal minerals. In 1977 the Surface Mining Control and Reclamation Act (SMCRA) set forth standards for designating certain areas as unsuitable for coal mining based upon other resource values. Unsuitability criteria 9 through 15 refer to wildlife values on coal areas. In the fall of 1979, a wildlife inventory was initiated in the Moorhead LRA to gather game and nongame animal population and habitat information. A special effort was made to identify those wildlife resources applicable to the unsuitability criteria. The objectives of the study were to:

1. Identify and document the occurrence and distribution of the game and nongame species on the study area.

2. Identify and document critical wildlife habitat on the study area, i.e., big game wintering areas, grouse dancing grounds, etc.

3. Identify and document the wildlife utilization of these habitats, i.e., migration routes, seasonal use areas, etc.

4. Identify and document any habitat conflicts and problems which may occur on the study area.

5. Identify suitable, but presently unoccupied, habitat for game and nongame species.

6. Identify and document any endangered species or endangered species habitat on the study area.

DESCRIPTION OF THE STUDY AREA

The Moorhead wildlife study area encompasses approximately 147,190 acres of the Decker-Birney Planning Unit in southeastern Montana. It is bordered on the north by the Ashland division of the Custer National Forest and on the south by the Montana-Wyoming border. The Moorhead coal field (26,606 acres) lies totally within the bounds of the study area. Portions of three counties, Big Horn, Rosebud and Powder River, lie within the study area.

The study area surface is mostly in private ownership (84.5%) with state (5.5%) and federal (10%) land scattered throughout the area. The current land use includes livestock grazing, hay production and small grain farming.

The region falls within the Great Plains Short Grass Prairie Province described by Bailey (1978). The ponderosa pine forest, sagebrush-steppe and grassland-sagebrush ecosystem (Packer, 1974) overlie the study area.

Two perennial drainages, Otter and Bear Creek, run south-to-north through the study area. The study period was an extremely dry year with little runoff and both streams had quit flowing by early summer with only a few pools remaining.

The vegetative cover was divided into six categories: agricultural lands, grassland, sagebrush-shrub, pine woodland, riparian and ponderosa pine (Figure 2). However, the photo interpretation maps available did not identify the riparian habitat or the agricultural lands.

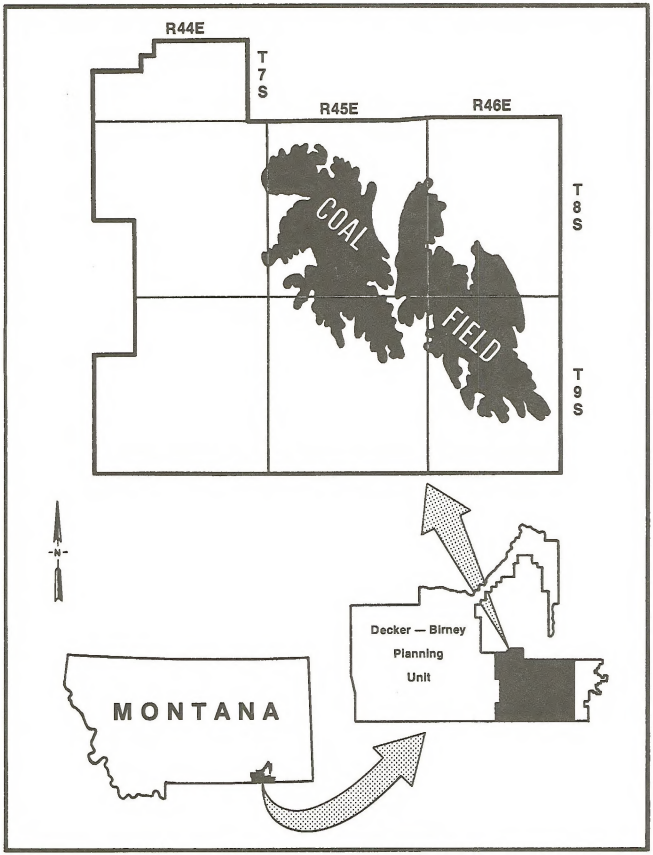
Agricultural lands were generally hay, dryland grain or fallow fields. Most of the bottomlands along Otter, Bear and Finn Creek were tilled and irrigated by water spreader dike systems.

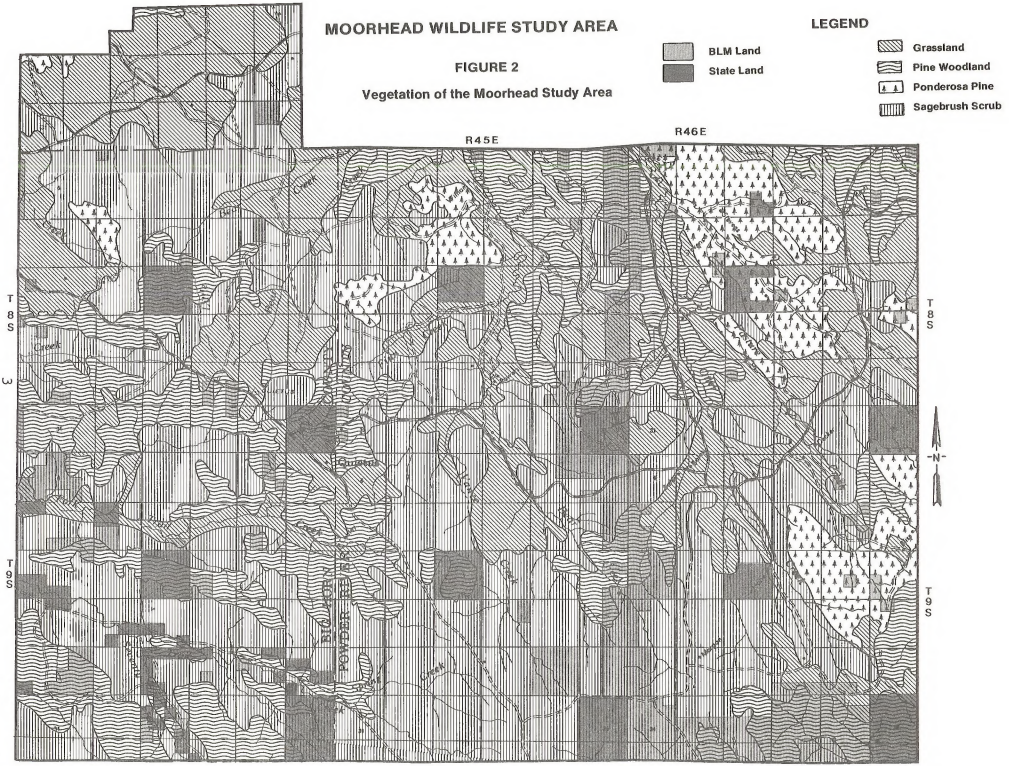
Grasslands were generally found on the flat or rolling highlands above the creek drainages. Blue grama (*Bouteloua gracilis*), green needle grass (*Stipa viridula*) and western wheatgrass (*Agropyron smithii*) were common grasses. Yellow sweet clover (*Melilotus officianalis*), prickly pear cactus (*Opuntia polyacantha*), big sage (*Artemisia tridentata*) and fringed sagewort (*A. frigida*) were common forbs and shrubs.

Expanses of sagebrush were found in topography similar to grasslands. Big sagebrush was the most common species, western wheatgrass, blue grama, green needlegrass, sweet clover, and prickly pear cactus were other common species. Distinction between grasslands and sagebrush lands was made by a visual observation of approximate crown closure. No attempt was made to separately identify the transition between the two cover types.

Ponderosa pine habitat was characterized as coniferous forest expanse on dry, moderately steep to steep slopes often found above drainages. Ponderosa pine (*Pinus ponderosa*) was most dominant with juniper (*Juniperus scopulorum*) and skunkbrush (*Rhus trilobata*) as the common understory shrubs.

FIGURE 1
MOORHEAD COAL FIELD
(In relationship to State of Montana)




MOORHEAD WILDLIFE STUDY AREA
FIGURE 2
Vegetation of the Moorhead Study Area
LEGEND
BLM Land
State Land
Grassland
Pine Woodland
Ponderosa Pine
Sagebrush Scrub
R45E
R46E
T 8 S
T 9 S
N
Quinn
POWDER RIVER

Riparian habitat was most often found along the major drainages, i.e., Otter Creek, Bear Creek and their tributaries. Plains cottonwoods (*Populus sargentii*) were common at the lower reaches of Otter and Bear Creek. Box elder (*Acer negundo*), green ash (*Fraxinus pennsylvanicus*), choke cherry (*Prunus americana*), rose (*Rosa spp.*) and snowberry (*Symphoricarpos occidentalis.*) were more common at the upper reaches of the drainages. Most ranchers wintered their livestock herds along drainages, thus riparian vegetation was generally restricted to a narrow strip along the creek bank.

Pine woodland habitat occurs as a transition between the ponderosa pine and big sagebrush-shrub associations. It occupies a variety of sites, and generally occurs on rocky, steep, southerly exposures. It extends along drainage ways and grades into grass and shrub types. Some of the plant species associated with this habitat type include: ponderosa pine (*Pinus ponderosa*), juniper (*Juniperus scopulorum*), skunkbush sumac (*Rhus trilobata*), big sagebrush (*Artemisia trindentata*), fringed sagewort (*Artemisia frigida*), western wheatgrass (*Agropyron smithii*), and bluebunch wheatgrass (*Agropyron spicatum*).

CLIMATE

Climate in the study area is characterized as continental with cold winters and warm summers with high evaporation rates. Moderately strong wind are common in the spring and fall as are thunderstorms in the summer. Wide seasonal fluctuations in temperature are common in the area. From 1961 through 1971, the Otter, Montana weather station recorded a maximum temperature of 110°F and a minimum of -32°.

Precipitation tends to be quite variable in the Otter vicinity. In a summary of rainfall from 1961 through 1971, the Moorhead station averaged 12.47 inches per year, while the Otter station averaged 19.13 inches over the same period. It is not uncommon for rainfall to vary 100% from year-to-year at any given station in the area (Decker-Birney URA, 1972). Approximately 75% of the precipitation occurs during the growing season.

During the study period, October 1979 through September 1980, 16.49 inches of precipitation was recorded at the Otter station. Most of the moisture occurred during the months of May and June.

METHODS

GAME SPECIES

The field biologist established two routes where windshield surveys were conducted to obtain information on game species. Data on species, sex, age class, location (to the nearest 0.1 mile) and vegetation type were recorded. The windshield surveys were conducted in the early morning or evening hours when wildlife activity was most apparent.

It was originally scheduled to conduct aerial surveys during the winter months to locate concentrations of game animals and possible winter ranges. This technique was not used because of the unusually mild winter of 1980 and the lack of snow cover. Winter vehicle routes were continued though and information on slope aspect use was recorded.

A sharp-tailed and sage grouse dancing ground search was conducted in April and May, 1980. Open roads were traveled by vehicle from 1/2 hour before sunrise until approximately 8 a.m. The vehicle was stopped periodically and the observer would search the area with binoculars and listen for displaying male grouse.

A pheasant crow count route was run along Otter and Bear Creeks (Figure 3). The route consisted of 20 two-minute stops at one mile intervals. The total number of "crows" heard at each stop was recorded. The route was run on two consecutive days in April, starting 1/2 hour before sunrise.

NONGAME SPECIES

Birds

Nongame birds were censused by two methods. Two vehicle routes were established and the majority of nongame bird data were collected by this method (Figure 4). Each route consisted of 25 three-minute stops at 1/2-mile intervals begun 1/2 hour before sunrise. The observer attempted to identify all birds by sight or song and recorded the total number of each species at each station. The routes were run twice each season.

Other nongame bird data were gathered by walking through areas with binoculars or stopping in wooded areas or along cliffs to look for nesting birds. Incidental sightings of unusual or new species were recorded while performing other inventories.

Small Mammals

Small mammal data were collected from each of the six vegetation types (Figure 5). Traplines were run twice each season, except winter, in each habitat. Each trapline consisted of 25 stations approximately ten meters apart with four traps at each station. A Sherman live trap and three snap traps were set at each station. A rat trap, two snap traps and a Sherman trap were used at every fourth (1,5,9,13, etc.) station. Traps were baited with peanut butter and rolled oats. Each trapline was run three or four consecutive nights. A trapping session consisted of 300 or 400 trap-nights, minus the number of traps snapped without capture.

Prairie Dogs

Prairie dog towns were located from ground census and color infra-red photo interpretation. Photos of the area were observed under a stereoscope and scanned for likely prairie dog town locations. Areas identified from photos as possible colonies were checked on the ground. The method met with 100% success. Approximate town boundaries were then plotted on 1/2-inch per mile maps (Figure 6).

Furbearers

No specific technique was used to identify or capture fur-bearing mammals. They were, however, recorded when observed while conducting windshield surveys, reservoir observations or ferret inventories.

Raptors

An effort was made to identify hawk and eagle nesting areas. Cliffs and tree tops were scanned for raptor nests. No nests were located during the study.

Reptiles and Amphibians

No special technique was used to capture reptiles or amphibians. They were, however, recorded when observed.

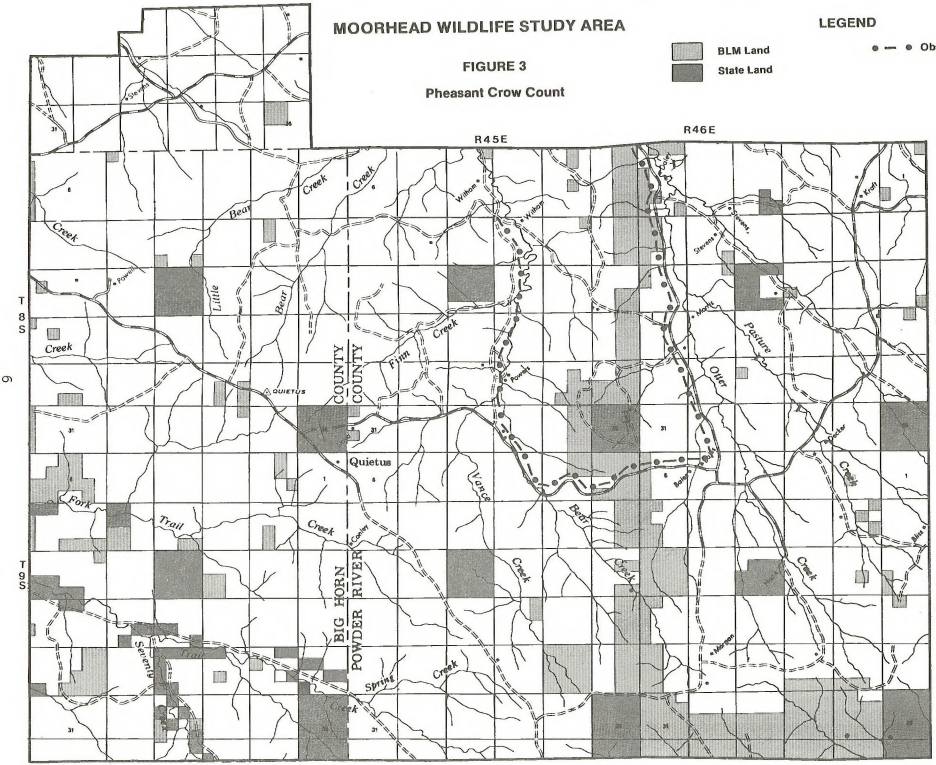
Endangered Species

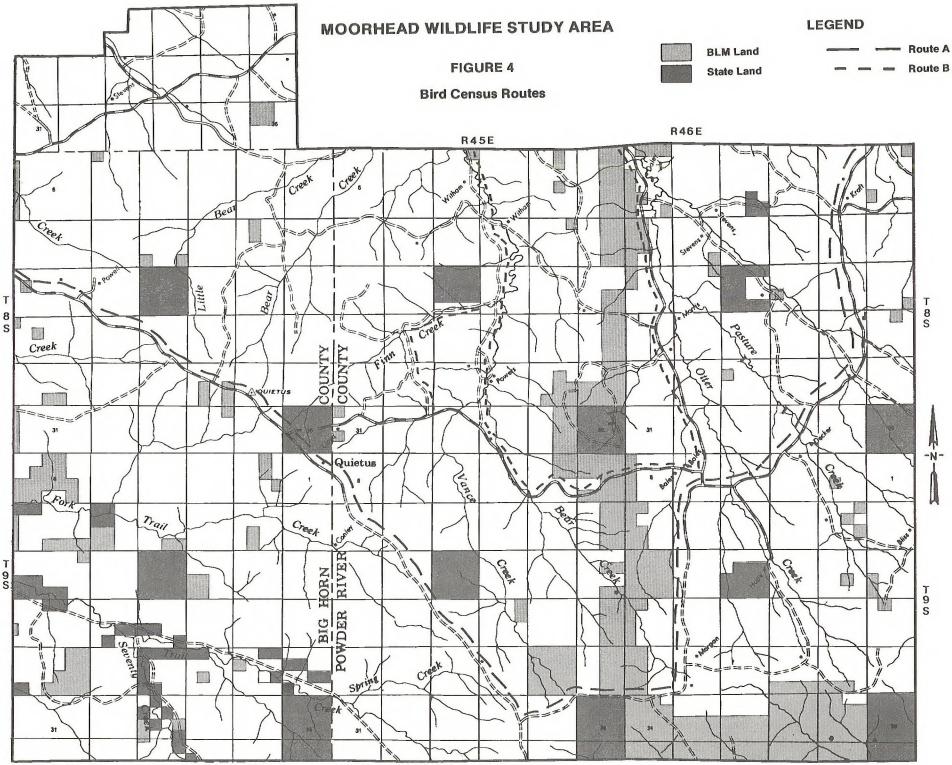
Prairie dog towns overlying the Moorhead coal field were inspected by BLM, U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks (MT FWP) possible indicators of black-footed ferret activity. One large town had several concentrations of plugged burrows. Those areas were flagged and, for three consecutive nights, the locations were inventoried with a high intensity spotlight for black-footed ferrets in July. The technique was to stop the vehicle at a prearranged station, wait five minutes, and shine the area for five minutes to locate any activity. The sequence was repeated twice for a total of three shining periods at each station. This technique was performed from 10 p.m. until 5 a.m. for three consecutive days.

MOORHEAD WILDLIFE STUDY AREA

FIGURE 3

Pheasant Crow Count

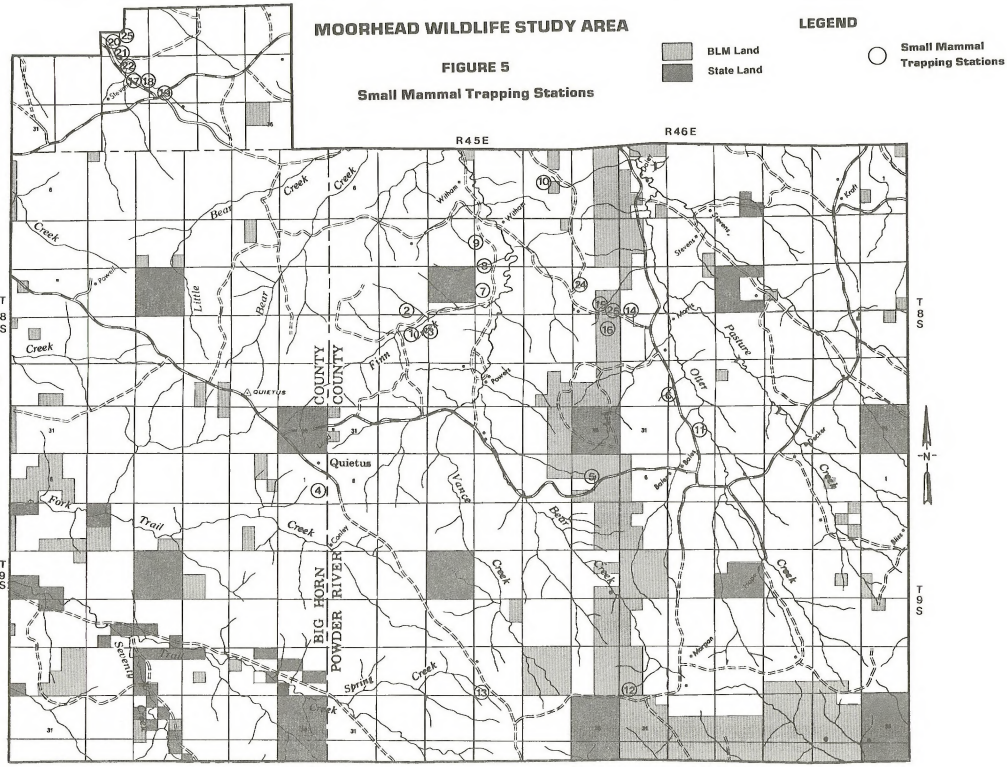


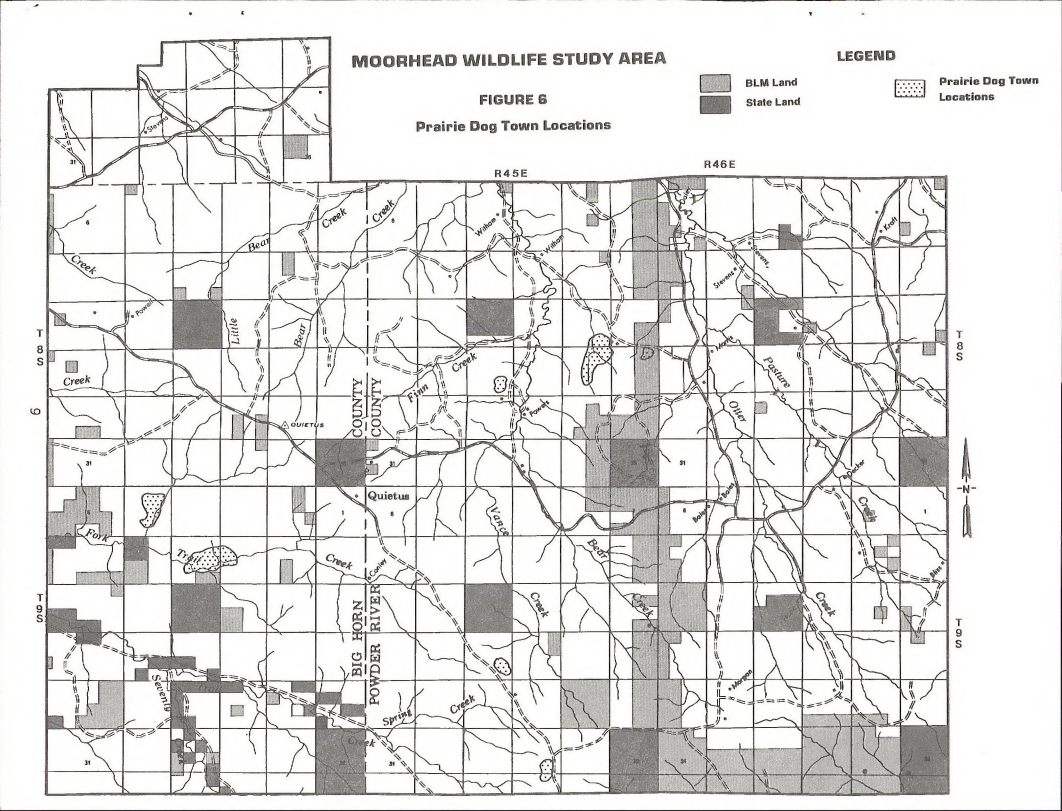

MOORHEAD WILDLIFE STUDY AREA
FIGURE 4
Bird Census Routes
LEGEND
BLM Land
State Land
Route A
Route B
R45E
R46E
T 8 S
T 9 S
Quietus
BIG HORN COUNTY
POWDER RIVER COUNTY
Little Bear Creek
Bear Creek
Finn Creek
Otter Creek
Badger Creek
Spring Creek
Seventy Six Creek
Trail Creek
Fork Creek
Pasture Creek
Verse Creek
Willow Creek
Sweetwater Creek
Ash Creek
Hay Creek
Pond
Marsh
Trail
Willow
Sweetwater
Ash
Hay
Marsh
N

MOORHEAD WILDLIFE STUDY AREA

FIGURE 5

Small Mammal Trapping Stations




MOORHEAD WILDLIFE STUDY AREA
FIGURE 6
Prairie Dog Town Locations
LEGEND
BLM Land
State Land
Prairie Dog Town Locations
R45E
R46E
T 8 S
T 9 S
BIG HORN COUNTY
POWDER RIVER COUNTY
Quietus
QUIETUS
Little Bear Creek
Bear Creek
Flint Creek
Otter Creek
Pasture Creek
Beaver Creek
Spring Creek
Sheep Creek
Trail Creek
Fork
Willow
Hay
Stones
Fruit
Powder
Mayor
N

RESULTS AND DISCUSSION

GAME SPECIES

Mule Deer

Population

Mule deer (*Odocoileus hemionus*) were the only species of deer encountered on the Moorhead study area. In conversation with landowners, white-tailed deer (*Odocoileus virginianus*) were very rarely seen that far up Bear and Otter Creek. A total of 406 mule deer in 71 sightings were observed during the study. This does not necessarily reflect the number of deer on the study area, however, as in April, 1981, a BLM biologist recorded 102 deer in 25 sightings during one observation period on the study area.

In 1979, aerial surveys were conducted by Montana FWP of hunting district 740, including the Moorhead study area (Figure 7). They reported 1791 mule deer in the 1136 square mile area, or 1.75 mule deer/mile (MT FWP, 1980).

Average deer group sizes in the Moorhead study were largest in spring and winter, 10.3 and 5.5, respectively, and smallest in summer and fall, 2.0 and 3.1. The largest herd had 30 deer. Population structure was determined from observations in late August, September and October (Table 1).

Table 1
MULE DEER POPULATION CHARACTERISTICS

	Numerical Classified				
Total	Bucks	Does	Fawns	Fawns/ 100 Does	Fawns/ 100 Adults
78	15 (19.2%)	32 (41%)	31 (39.7%)	97	66

Habitat and Distribution

Mule deer were observed in every habitat (Table 2). Most of the deer sightings were in habitats along or adjacent to drainages and in the pine break areas. Both of these areas provided edge and escape cover with several small openings of grassy or xeric vegetation with tree cover nearby. Access was not acquired in the southwest corner of the study area, so no observations were recorded there.

Seasonal use of habitats by mule deer is shown in Figure 8. Most sightings occurred in the ponderosa pine habitat in fall, winter and summer months, while sagebrush-shrub habitat use was most evident in the spring.

Table 2
SEASONAL USE OF HABITAT BY MULE DEER

		Fall	Winter	Spring	Summer
Grassland	*	2	4	3	1
	**	(8.0%)	(36.4%)	(13.6%)	(7.7%)
Sagebrush-shrub		5	1	12	2
		(20%)	(9.19%)	(54.5%)	(15.4%)
Ponderosa Pine		10	5	4	6
		(40%)	(45.4%)	(18.2%)	(46.2%)
Agricultural Land		2	0	2	2
		(8.0%)	(0%)	(9.1%)	(15.4%)
Riparian		4	1	0	2
		(16%)	(9.1%)	(0%)	(15.4%)
Pine Woodland		2	0	1	0
		(8%)	(0%)	(4.6%)	(0%)

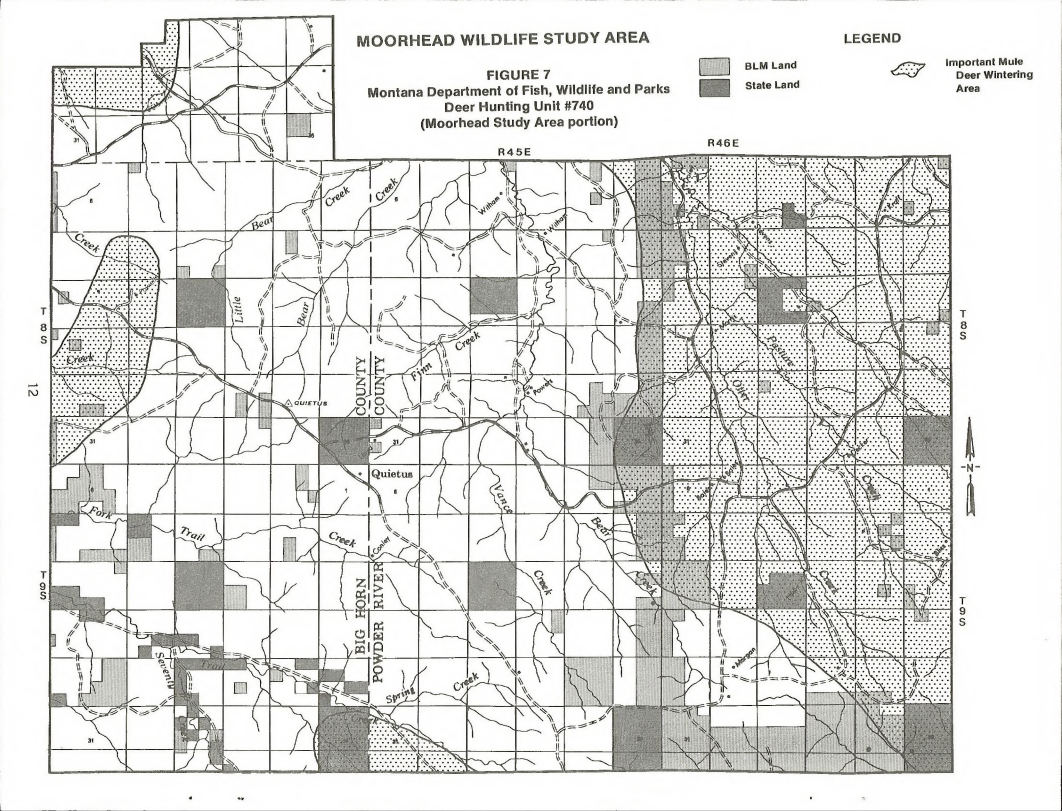
*Number of observations
**Percentage of total observations for that season

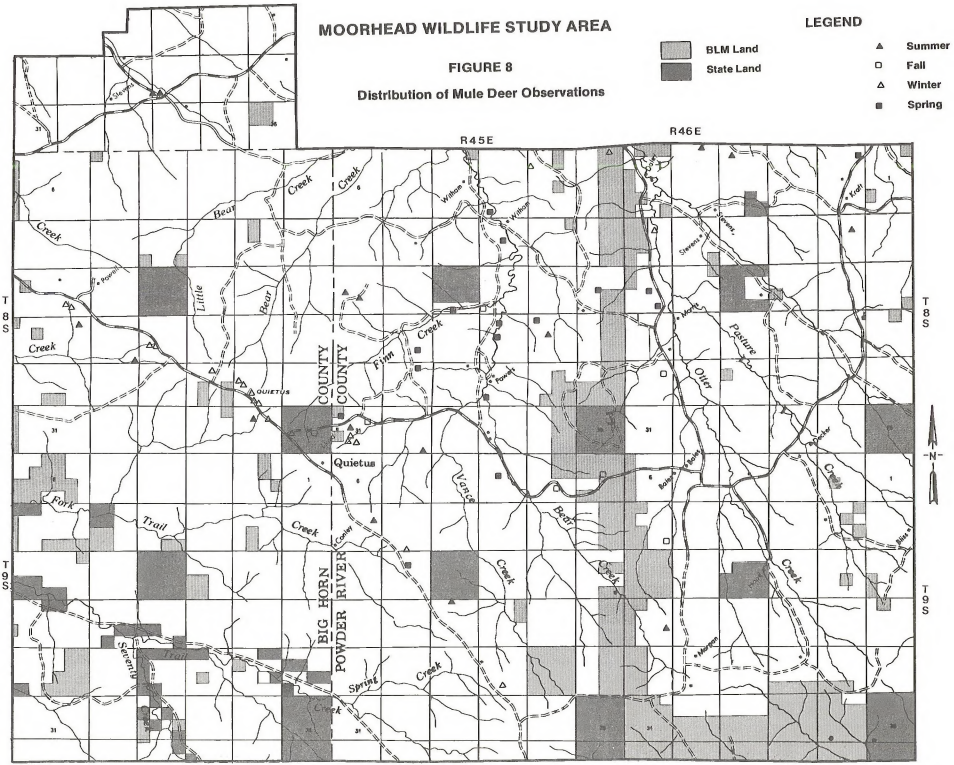
Light snow cover during the winter months did not restrict mule deer movement or use of vegetation on the study area. No winter concentrations of deer were observed during the seven observation route conducted from the middle of December through March. One landowner stated that the vegetation and topography of the area was such that mule deer rarely gathered in large numbers in any winter.

Mule deer use of slope exposure (aspect) was recorded for the winter months. Fifty percent of the deer seen were on south facing slopes, 30% on flat areas, 14% on north slopes, and 6% on east or west facing slopes.

In general, the entire study area provided good to excellent mule deer habitat. Pine hills with isolated open areas, interspersed with woody draws and a nearby water source at Otter, Bear, Finn, Lee and Trail Creeks provided year long habitat requirements.

Some conflict may exist between deer and livestock during the winter months. The topography and access in the Moorhead area is such that ranchers move their cattle from the upland hills down to the major creek bottoms for winter feeding. The high density of livestock on a limited amount of area for prolonged periods of time puts increased pressure on creek bottom or riparian vegetation. In some areas, woody vegetation showed signs of heavy cropping while big sagebrush had invaded other riparian sites. With the limited mule deer use of riparian habitat exhibited during the study, this may not be a major problem. The riparian condition may, however, partially explain the absence of white-tailed deer.


MOORHEAD WILDLIFE STUDY AREA
FIGURE 7
Montana Department of Fish, Wildlife and Parks
Deer Hunting Unit #740
(Moorhead Study Area portion)
LEGEND
BLM Land
State Land
Important Mule Deer Wintering Area
R45E
R46E
T8S
T9S
12
Quietus
COUNTY
COUNTY
BIG HORN
POWDER RIVER
Bear Creek
Little Bear Creek
Finn Creek
Trail Creek
Spring Creek
Foyil Creek
Beaver Creek
Dry Fork
N


MOORHEAD WILDLIFE STUDY AREA
FIGURE 8
Distribution of Mule Deer Observations
LEGEND
BLM Land
State Land
Summer
Fall
Winter
Spring
R45E
R46E
T 8 S
T 9 S
COUNTY
COUNTY
BIG HORN
POWDER RIVER
Quietus
Little Bear Creek
Hoyt Creek
Fivet Creek
Liver Creek
Pasture Creek
Otter Creek
Trail Creek
Spring Creek
Seventy Four Creek
Fork
N

Antelope

Population

During the four-season study, 624 antelope (*Antilocapra americana*) were observed in 57 sightings. Herd sizes were largest in winter and fall, 405 and 14 animals, respectively, and smallest in summer and spring, 4.5 and 7.0 respectively. The largest group observed in February had 61 antelope.

Montana Fish, Wildlife and Parks has conducted aerial surveys of hunting district 742 at regular intervals since 1963 (Figure 9). Density per square mile was estimated from 0.2 to 0.8 antelope over the 1255 square mile area. In the severe winter of 1977-78, the antelope population throughout most of Region 7 was greatly reduced. In 1978 Montana FWP estimated that 68 antelope were harvested in unit 742, of which 57 were bucks. In 1979, 59 pronghorns were taken, of which only 30 were bucks. The sharp reduction in adult male percent of the total harvest (84% down to 44%) are indications that the antelope population took a sharp decline.

Habitat and Distribution

Antelope were observed in four vegetation types. Sixty-five percent of all antelope seen were in sagebrush-shrub and grassland habitats.

Antelope sightings occurred most often in sagebrush in fall, winter and spring, while grassland showed more use in summer. Herd sizes were largest in winter when two groups averaging 48 antelope were seen and smallest in summer when herds averaged 4.5 antelope (Table 3).

Table 3
ANTELOPE SEASONAL USE OF HABITAT

	Fall	Winter	Spring	Summer
Sagebrush-shrub	* 8(42) **(12.5%)	2(97) (100%)	8(66) (62.3%)	5(15) (17.6%)
Grassland	7(105) (31.3%)		3(35) (33.0%)	7(43) (50.6%)
Agricultural Lands	5(117) (34.8%)			4(12) (14.1%)
Pine Woodland	4(72) (21.4%)		1(5) (4.7%)	3(15) (17.7%)

*Number of observations (total number of antelope seen)
**Percentage of antelope observed during that season

Distribution of antelope observations are shown in Figure 10. The sightings generally corresponded to sagebrush-grassland expanses on the study area.

Furthermore, it should be noted that all winter observations were made in one area adjacent to Otter Creek. The lack of snowfall and normal winter conditons preclude designating this location as a wintering area, but this area should be more closely examined when normal winter conditions exist.

Grouse

Sage grouse (*Centrocercus urophasianus*) and sharp-tailed grouse (*Pediocetes phasianellus*) were found throughout the uplands in the Moorhead study area. Sage grouse flocks were observed seven times, while sharp-tailed grouse were seen 19 times. Sage grouse were observed in three habitat types and, as might be expected, 94% of the sage grouse seen were in sagebrush habitat. On the other hand, sharp-tailed grouse were observed in all habitats, but were observed most often in sagebrush (31%), grasslands (24%) and agricultural lands (33%).

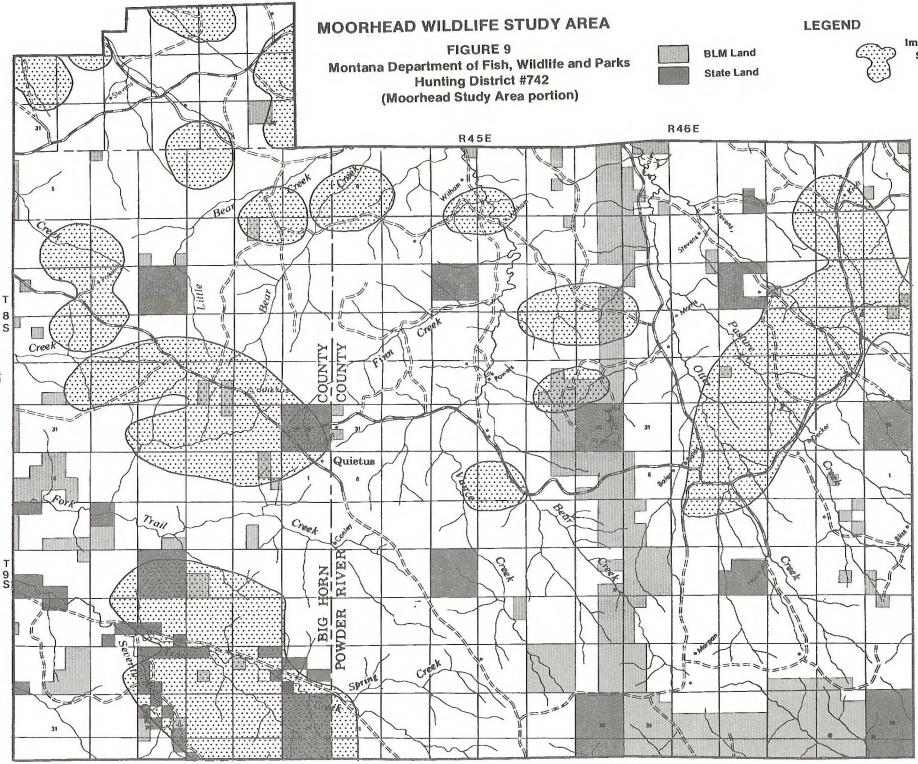
Flocks of grouse were largest in the winter. A group of sharp-tailed grouse observed in a wheat field in January had approximately 80 birds and a flock of sage grouse seen twice in February had more than 50 birds. Two sharptail broods were observed during the summer. One brood had six chicks, and the other brood four chicks. A flock of 20 juvenile sharptails were found along Lee Creek, but no adult birds were seen to discern the number of broods. No sage grouse broods were observed during the survey.

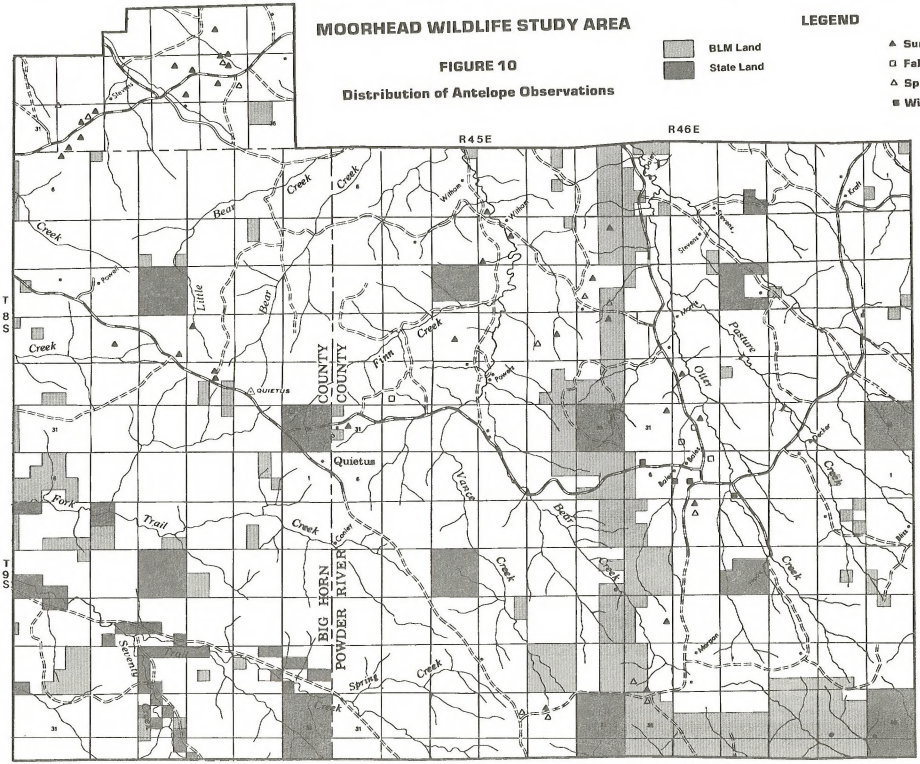
Fifteen sharp-tailed and five sage grouse dancing grounds were identified on the study area (Figure 11 and Table 4).

Ring-Necked Pheasant and Hungarian Partridge

Ring-necked pheasants (*Phasianus colchicas*) were associated with the major drainages and the nearby vegetation on the study area. Ninety-nine percent of all pheasant observations were made in habitats associated with the drainages; riparian (48%) pine woodland (11%) and agricultural lowlands (40%). Pheasants were sighted 30 times during the study. Five broods were observed, with an average brood size of 5.8 young.

The pheasant crow count route yielded 7.6 crows per stop (Figure 3). This was considerably lower than the four year average of 18.9 crows per stop on the lower Otter Creek route (Knapp 1979). Fewer crows would be expected though, considering the limited riparian habitat found on the Moorhead study area. Agriculture and grazing practices have reduced the amount of edge and woody cover in the area.


MOORHEAD WILDLIFE STUDY AREA
FIGURE 9
Montana Department of Fish, Wildlife and Parks
Hunting District #742
(Moorhead Study Area portion)
LEGEND
BLM Land
State Land
Important Antelope Summer Areas
R45E
R46E
T 8 S
T 9 S
15
N
Quietus
Trail
Creek
Little Bear Creek
Bear Creek
Fire Creek
Otter Creek
Beaver Creek
Spring Creek
BIG HORN COUNTY
POWDER RIVER COUNTY


MOORHEAD WILDLIFE STUDY AREA
FIGURE 10
Distribution of Antelope Observations
LEGEND
BLM Land
State Land
Summer
Fall
Spring
Winter
R45E
R46E
T8S
T9S
BIG HORN COUNTY
POWDER RIVER COUNTY
Quietus
Bear Creek
Little Bear Creek
Firm Creek
Otter Creek
Fort Trail Creek
Lance Creek
Badger Creek
Spring Creek
Sheridan
Wilson
Stevens
Forest
Pasture
Forker
Bates
Johnson
Hawkins
Meyers
N

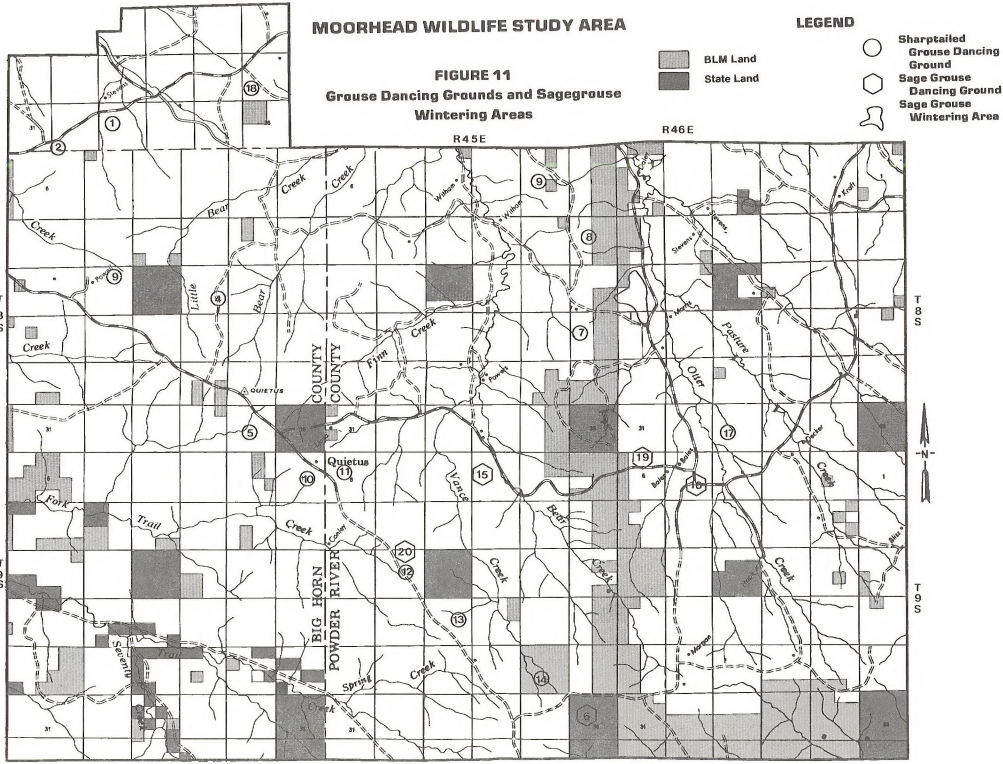

MOORHEAD WILDLIFE STUDY AREA
FIGURE 11
Grouse Dancing Grounds and Sagegrouse Wintering Areas
LEGEND
BLM Land
State Land
Sharptailed Grouse Dancing Ground
Sage Grouse Dancing Ground
Sage Grouse Wintering Area
R45E
R46E
T 8 S
T 9 S
17
Quietus
COUNTY
COUNTY
BIG HORN
POWDER RIVER
Little Bear Creek
Trail Creek
Fish Creek
Otter Creek
Badger Creek
Spring Creek
Pasture Creek
Sheridan Creek
Fork
N

Table 4
SHARPTAIL AND SAGE GROUSE ARENA LOCATIONS

Location				Number of Males
Sharptails				
	T.	R.	S.	
1-M	7S	44E	33	24
2-M	7S	44E	32	8
3-M	8S	44E	20	21
4-M	8S	44E	22	18
5-M	8S	44E	35	6
7-M	8S	45E	23	12
8-M	8S	45E	12	22
9-M	8S	45E	2	2
10-M	9S	44E	1	10
11-M	9S	45E	6	18
12-M	9S	45E	17	?
13-M	9S	45E	21	13
14-M	9S	45E	26	?
17-M	8S	46E	33	?
18-M	7S	44E	25	8
Sage Grouse				
	T.	R.	S.	
6-M	9S	45E	36	7
15-M	9S	45E	3	19
16-M	9S	46E	5	5
19-M	9S	46E	6	4
20-M	9S	45E	17	3

Hungarian partridges (*Perdix perdix*) were uncommon on the study area. Four groups of huns, averaging 9.1 birds per covey, were seen. Two groups were observed in small grain fields and two in grassland habitat. The study area lacked the essential habitat components for a good Hungarian partridge population. Upland grain fields were not widespread and residual grass cover was uncommon.

Merriam's Turkey

Merriam's turkeys (*Meleagris gallopavo*) were first released in the Ashland area in 1957 (Green and Ellas, 1971). The introduction was successful and the birds flourished in the rugged, open ponderosa pine habitat characteristic of the area. Today, Rosebud County ranks second to Carter County in turkeys harvested in Montana and, in 1979, an estimated 604 hunters took 220 turkeys in Rosebud County (Knapp, 1980).

Turkeys were sighted at three locations on the study area, twice in ponderosa pine and once in agricultural land (Figure 12). The average number of turkeys was twelve per flock. However, one of the ranchers reported that it was not unusual to see fifty or more turkeys come out of the ponderosa pine to the creek bottom habitat during summer mornings (Morris 1980).

The rugged pine hills above Otter, Bear and Finn Creeks provide excellent habitat for the Merriam's turkey. With the Custer National Forest along the northern border of the study area, turkey hunting is a valuable fall and spring recreation opportunity.

Waterfowl

Since very few wetlands or ponds exist on the study area, waterfowl were uncommon. Only a few, small reservoirs have been constructed in the area, as water for livestock is provided in small streams or stock tanks. The following species were observed:

	Breeding Evidence
Mallard (*Anas platyrhyonchos*)	yes
Pintails (*Anas acuta*)	no
Blue-winged Teal (*Anas discors*)	yes
Cinnamon Teal (*Anas cyanoptera*)	yes
American Widgeon (*Mareca americana*)	yes
Shoveler (*Spatula clypeata*)	yes
Bufflehead (*Bucephala albeola*)	yes

Nearly all observations of waterfowl were made in spring migration. Summer breeding pairs and ducklings were seen at one of four ponds (Figure 13). Because of the lack of suitable habitat, the importance of the study area to waterfowl was limited. The potential for improving waterfowl habitat exists by providing more water sources through reservoir construction.

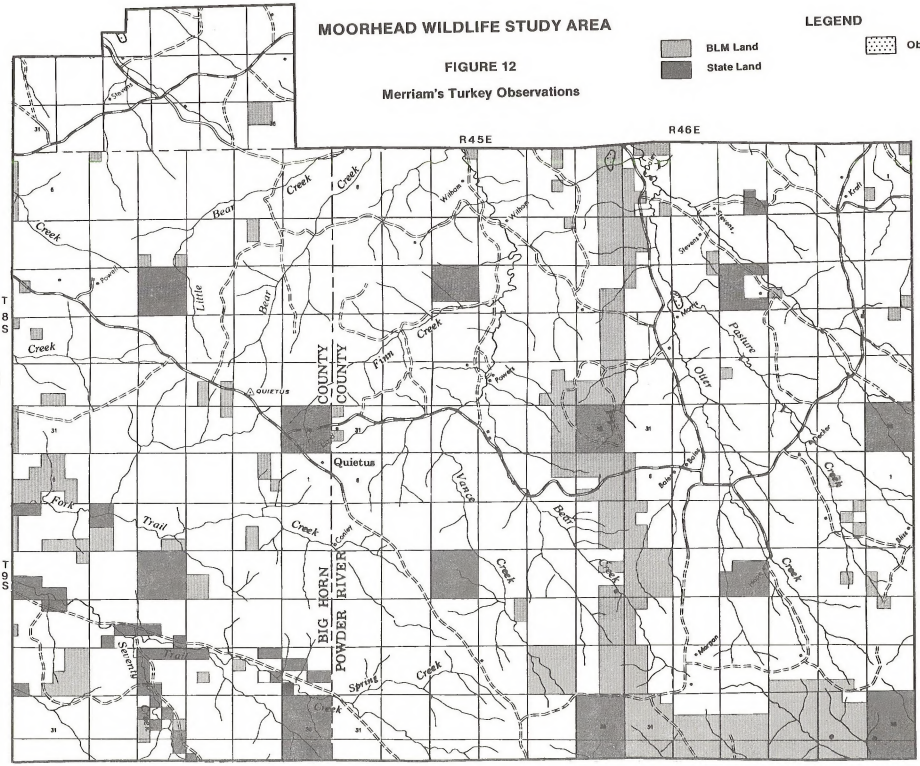
NONGAME SPECIES

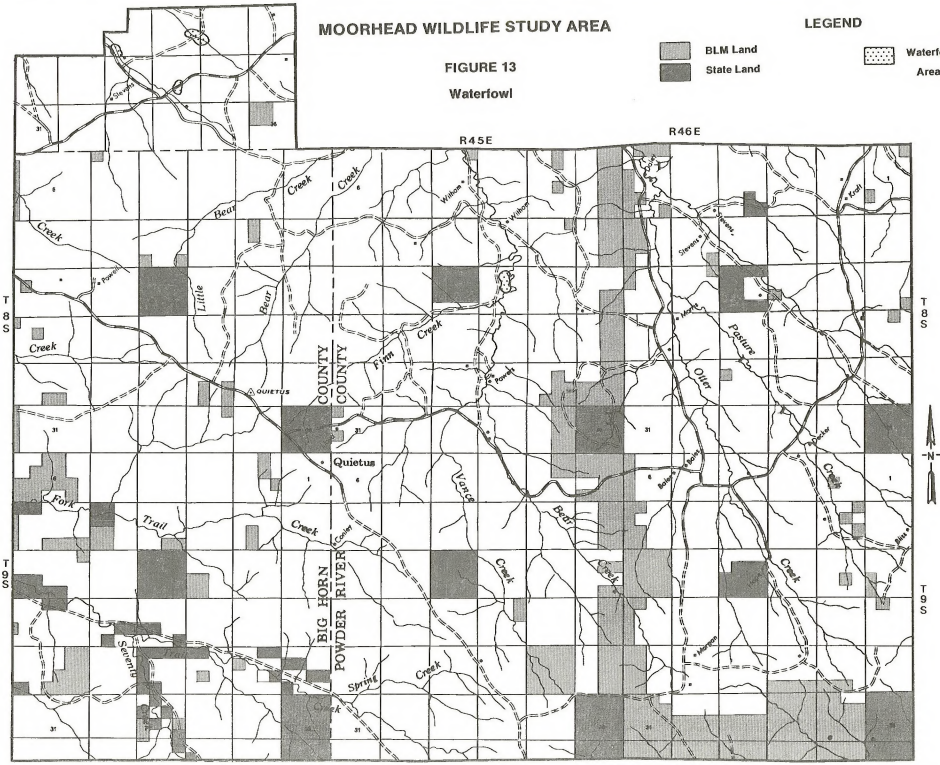
Raptors

Hawks and Eagles

Twenty-one species of raptors have been identified by Skaar (1980) as possibly occurring in the Moorhead area. Ten species were identified on the study area and the greatest number of species (nine) were observed during the fall.

No active nests were located during the study. Suitable nesting habitat for cliff nesting raptors was not available on the Moorhead area. However, sandstone cliffs were found along Otter Creek adjacent to the northwest border of the study area. Golden eagles (*Aquila chrysaetos*) were often observed soaring or perched there but no nests were located. The following year an active golden eagle nest was found near this area at T7S R44E, SW 1/4 of Section 21 (Matthews, unpubl. data).


MOORHEAD WILDLIFE STUDY AREA
FIGURE 12
Merriam's Turkey Observations
LEGEND
BLM Land
State Land
Observation Sites
R45E
R46E
T8S
T9S
BIG HORN COUNTY
POWDER RIVER COUNTY
Quietus
Little Bear Creek
Bear Creek
Fish Creek
Pasture Creek
Otter Creek
Bonfire Creek
Spring Creek
Fork Trail Creek
Serenity Trail
Trail Creek
N


MOORHEAD WILDLIFE STUDY AREA
FIGURE 13
Waterfowl
LEGEND
BLM Land
State Land
Waterfowl Use Areas
R45E
R46E
T 8 S
T 9 S
20
Quietus
BIG HORN COUNTY
POWDER RIVER COUNTY
Little Bear Creek
Bear Creek
Firm Creek
Trail Creek
Spring Creek
Pasture Creek
Otter Creek
Beaver Creek
Wilson Creek
Stevens Creek
Hoyt Creek
Adkins Creek
Blue Creek
Dutton Creek
Powell
Ft. Smith
-N-

Two inactive nests, believed to be buteo nests, were observed in the ponderosa pine habitat. No white-wash was seen at either site. The ponderosa pine habitat provided cavities, snags and isolated or tall trees suitable for nesting raptors and, although none were found, nesting was highly probable.

Vultures

One turkey vulture (*Cathartes aura*) was observed during November. Vultures were not observed at any other time. Thus, the one sighting was suspected to be a migrant.

Owls

The great-horned owl (*Bubo virginianus*) was the only owl observed in the area. Although considerable time was spent surveying prairie dog towns, burrowing owls (*Speotytp cunicularia*) were not seen. The small, nocturnal saw-whet owl (*Aegolius acadicus*), a state "special interest" species, probably exists on the study area, but none were observed.

Reptiles and Amphibians

Nine species of reptiles and amphibians were identified on the study area (Table 5).

The hognose snake (*Heterodon nasicus*) and snapping turtle (*Chelydra serpentina*) are "special concern" species (Flath 1981). The hognose snake observed was a roadkill in a dry, upland site. Two snapping turtles were observed in deep pools of Otter and Bear Creek.

Table 5
REPTILES AND AMPHIBIANS
OBSERVED ON THE MOORHEAD AREA

Plains Garter Snake	*Thamnophis radix*
Prairie Rattlesnake	*Crotalus viridis*
Bull Snake	*Pituophis melanoleucus*
Racer	*Coluber constrictor*
Hognose Snake	*Heterodon nasicus (sp. concern)*
W. Chorus Frog	*Pseudacris triseriata*
Leopard Frog	*Rana pipiens*
Painted Turtle	*Chrysemys picta*
Snapping Turtle	*Chelydra serpentina (sp. concern)*

Birds

Eighty species of birds were identified on the Moorhead study area including: nine species of raptors, five species of upland game birds and eight species of waterfowl. Two nongame birds that were identified are listed as "special concern species" for Montana by Flath (1981). The Mountain bluebird (*Sialia currucoides*) was fairly common in the ponderosa pine habitat and was observed nesting. An upland sandpiper (*Bartramia longicauda*) was seen once, near a reservoir.

Seasonal abundance of birds was distributed as one would expect. Spring had the most species (47), as migrants appeared in the area. Summer and fall had approximately the same number of birds (25 and 22 species, respectively), but only ten species were observed in both seasons. Winter had the least number of species (17) with raptors and upland game birds making up the majority (eleven).

Bird Route Data

Bird routes (Figure 4) covered all the vegetation types found in the Moorhead area. Twenty-nine species of birds were identified from the routes in the spring; whereas, only nine and eight species of birds were recorded in the summer and fall, respectively.

Meadowlarks (*Sturnella neglecta*) ring-necked pheasants, mourning doves (*Zenaidura macroura*), red-winged blackbirds (*Agelaius phoeniceus*), vesper sparrows (*Pooecetes gramineus*) and lark sparrows (*Chondestes grammacus*), in decreasing order, were most common on the routes (Table 6).

Table 6
MOST COMMONLY IDENTIFIED BIRDS FROM THE BIRD ROUTES

Species	Spring Observation	Summer Observation	Fall Observation
Meadowlark	40	12	0
Ring-necked Pheasant	28	0	6
Mourning Dove	28	4	1
Red-winged Blackbird	17	1	0
Vesper Sparrow	14	3	0
Lark Sparrow	11	2	0

Species Accounts

Observation of nongame birds are tabulated in Appendix A. Information on breeding evidence and habitat use can be found there.

The coot (*Fulica americana*) was observed on or near reservoirs. The sora (*Porzana carolina*) is believed to occur and possibly breed in the area (Skaar 1980); however, no sighting were made.

One plover was observed. The killdeer (*Charadrius vociferous*) was abundant and often seen in pastures or roadside ditches. Evidence of breeding was observed for the killdeer.

Skaar (1980) identified six species of sandpipers in the area. Only the upland plover (*Bartramia longicauda*) was observed.

Wilson's phalarope (*Steganopus tricolor*) was the only phalarope observed. The only other shorebird observed was the common snipe (*Capella gallinago*).

In general, shorebirds, gulls and waterfowl were uncommon in the Moorhead area because of the small amount of wetland habitat on the area.

The rock dove (*Columba livia*) and mourning dove (*Zenaidura macroura*) were observed. The rock dove was commonly seen around farmyards and barns. The mourning dove was abundant along creeks and pastures in the study area.

Although Skaar lists six owls that may occur in the area, only the great horned owl (*Bubo virginianus*) was observed. The burrowing owl, (*Speotyto cunicularia*) is a species of "special concern" in Montana. Prairie dog towns, their preferred habitat, were intensively inventoried in June for black-footed ferrets, but no evidence of burrowing owls was found.

The belted kingfisher (*Megaceryle alcyon*) was commonly observed along Otter Creek. Although no breeding evidence was observed, several observations were made near Otter Creek mud banks, a common nesting area of the kingfisher (Udvardy 1977).

Only one goatsucker, the common nighthawk (*Chordeiles minor*), was identified. Nighthawks were most commonly seen near creeks, reservoirs, and wetlands.

Three species of woodpeckers were observed in the study area. The common flicker (*Colaptes auratus*) and red-headed woodpecker (*Melanerpes erythrocephalus*) were common along deciduous bottoms and pine hillsides. The hairy woodpecker (*Dendrocopos villosus*) was also observed in creek bottom habitat.

Five species of flycatchers were seen. The eastern kingbird (*Tyrannus tyrannus*) and western kingbird (*Tyrannus verticalis*) were two of the most common bird found in creek bottom habitat during the summer. Evidence of breeding was found for both species. The cassins kingbird (*Tyrannus vociferans*) was also observed in creek bottom habitat. The dusky flycatcher (*Empidonax oberholseri*) and western wood peewee (*Contopus sordidulus*) were also observed along deciduous creeks and drainages.

Horned larks (*Eremophila alpestris*) were often seen in open areas, near small grain fields, during the winter months. Other bird studies of eastern Montana have found the horned lark to be the dominant winter species (Matthews 1979, Thompson 1978), but they were not common in the Moorhead area.

Four species of swallows were identified. The barn swallow (*Hirundo rustica*) was the only one for which breeding evidence was found. Mud nests with young were observed on Otter Creek. All swallows were observed near water along Otter and Bear Creek.

The pinyon jay (*Gymnorhinus cyanocephalus*) was common in the ponderosa pine forests. Black-billed magpies (*Pica pica*) were a common year-round resident. Crows (*Corvus brachyrhynchos*) were occasionally observed in the pines or along drainages near grain fields.

The black-capped chickadee (*Parus atricapillus*) and red-breasted nuthatch (*Sitta canadensis*) were observed in ponderosa pine. Chickadees were observed in deciduous thickets. The pigmy nuthatch (*Sitto pygmaea*) was observed once in a pine forest habitat.

The house sparrow (*Passer domesticus*) was a year-round resident, generally observed near homes and farm buildings.

Seven species of the blackbird and oriole family were observed. The western meadowlark (*Sturnella neglecta*) and red-winged blackbird (*Agelaius phoeniceus*) were the most common birds observed during spring and summer. Meadowlarks were seen in every habitat type, while red-winged blackbirds were most often seen in lowland habitats. Breeding evidence was found for both species.

Skaar lists four wren species that may occur in the area. Only the house wren (*Troglodytes aedon*) was observed. They were abundant in deciduous thickets throughout the area. Nest building, pairs and young were observed.

Four species of the *Turdidae* family were observed, the robin (*Turdus migratorius*), mountain bluebird, gray catbird (*Dumetella carolinensis*) and brown thrasher (*Toxostoma rufum*). Robin nests and young were found in deciduous bottoms. Catbirds and thrashers were fairly common in the creek bottom habitat of major drainages.

The loggerhead shrike (*Lanius ludovicianus*) was the only shrike observed. They were occasionally seen perched on fences in open areas from spring through fall.

The starling (*Sturnus vulgaris*) is an unprotected pest species in Montana. They were commonly observed in hayfields, pastures or grainfields in spring and summer.

The solitary vireo (*Vireo solitarius*) was the only vireo seen. One vireo was observed constructing a nest in ponderosa pine habitat.

Three warbler species were identified. The yellow warbler (*Dendrocia petechia*) and common yellowthroat (*Geothlypis trichas*) were observed in deciduous woodlands, while the myrtle warbler (*Dendrocia coronata*) was seen in ponderosa pine habitat.

Eight species of *Fringillids* (grosbeaks, finches, sparrows and buntings) were observed in the area. Breeding evidence was observed for the American goldfinch (*Spinus tristis*), rufous-sided towhee (*Pipilo erythrophthalmus*), and lark sparrow (*Chondestes grammacus*).

Mammals

Twenty-four species of mammals were identified on the Moorhead study area. Included in the group were two game species, seven furbearers, and one "special concern" species for Montana. According to Hoffman and Pattie (1968) sixty-four species of mammals may occur in the Moorhead vicinity.

One shrew, the masked shrew (*Sorex cinereus*) was captured on a trapline in a grass coulee. Merriam's shrew (*Sorex merriami*), a "special concern" species, is associated with arid, sagebrush habitats. Several trapping attempts were made in sagebrush, but no shrews were captured.

The study area lies within the range of ten bat species. No bats were observed in the area, although one little brown bat (*Myotis lucifugus*) was found dead along the road approximately 20 miles from the study area near the town of Birney, Montana. The small number of ponds with trees or cliffs nearby, where bats are usually found, led the observer to believe that bats were uncommon on the study area.

Two species of rabbits were observed, the white-tailed jackrabbit (*Lepus townsendi*) and a cottontail, believed to be the desert cottontail (*Sylvilagus auduboni*). Both species were observed in open, arid grasslands or sagebrush habitat. Occasionally, cottontails were observed on ponderosa pine hillsides. One juvenile cottontail was captured in a rat trap at a grassland site.

Five species of the squirrel family were observed. The least chipmunk (*Eutamias minimus*) and thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*) were captured in ponderosa pine and sagebrush trap lines, respectively. They were also observed in those habitat types quite often. Seven blacktailed prairie dog (*Cynomys ludovicianus*) towns were located in the study area (Figure 6). The largest town was estimated to cover 223 acres. All prairie dog towns were in grassland or sagebrush habitat types. Two more uncommon squirrels, the red squirrel (*Tamiasciurus hudsonicus*) and the yellowbelly marmot (*Marmota flaviventris*) were also observed. One red squirrel was observed in cottonwood trees along Otter Creek. Although the yellowbelly marmot is generally associated with the more mountainous terrain of western Montana, an isolated population is known to exist in the Ashland division of the Custer National Forest area. Marmots were observed at two locations in agricultural areas along Otter Creek.

The northern pocket gopher (*Thomomys talpoides*) is generally found in grain fields and dry upland sites. Because they are a pest species, they are often poisoned or trapped by landowners. No special attempt was made to trap pocket gophers during the study, but their burrow strips were common near agricultural fields and roadside ditches.

Beavers (*Castor canadensis*) are found along rivers and perennial streams throughout Southeastern Montana. Landowners in the Moorhead area noted beavers along Otter Creek, Bear Creek and Finn Creek. Although no beaver were observed, fresh cottonwood cuttings were found along Otter Creek. Beaver populations were probably very low because of the lack of spring runoff and the absence of running water in the major creeks.

Eight species of new world mice were identified. Deer mice (*Peromyscus maniculatus*) were the most common mammal in all habitats. Voles were captured in ponderosa pine habitat, grassland and creek bottoms. It was, therefore, concluded that prairie voles (*Microtus ochrogaster*) and meadow voles (*M. pennsylvanicus*) were both present. Western harvest mice (*Reithrodontomys megalotis*) were common in agricultural, sagebrush and pine woodland habitats; whereas, the northern grasshopper mouse (*Onychomys leucogaster*) was observed only once in grassland habitat.

Muskrats (*Ondatra zibethica*) were observed along Bear Creek and at two small reservoirs. It was suspected that muskrats occur on perennial drainages and reservoirs throughout the study area.

Porcupines (*Erethizon dorsatum*) were abundant in the area. Several observations were made along Otter Creek as well as in the ponderosa pine habitat.

The coyote (*Canis latrans*) and the red fox (*Vulpes vulpes*) were common canids in the area. Fox were observed mostly in creek bottom habitat and agricultural areas, while coyotes were observed in all habitats. According to landowners, aerial hunting and steel traps are used for predator control.

Raccoons (*Procyon lotor*) were uncommon on the study area, but, according to landowners, their populations are increasing along the creek bottoms.

Three species of the weasel family were observed. One long-tailed weasel (*Mustela frenata*) was observed at a prairie dog town. Badgers (*Taxidea taxus*) were fairly common at upland sites, prairie dog towns and agricultural habitats. Striped skunks (*Mephitis mephitis*) were common in creek bottom habitats on the study area.

A black-footed ferret (*Mustela nigripes*) inventory was performed on the largest prairie dog town. Thirteen locations of freshly plugged burrows were staked for three nights of spotlighting. No ferrets were seen, but a long-tailed weasel and a badger were observed during the inventory.

No bobcats (*Lynx rufus*) were observed on the study area. Cat tracks were found along Finn Creek though and a rancher reported that bobcats were trapped that season on the area.

Trapping Results

Small mammal trapping was conducted in six vegetation types. There were 171 captures, resulting in a 1.84 capture/100 trap night efficiency for 9275 trap nights (Appendix B). Nine species of small mammals were captured. Deer mice and western harvest mice were the most abundant species. Deer mice were the only species captured in every habitat type. Trapping success was highest in agricultural and riparian habitats, while the greatest number of species (4) was captured in sagebrush-shrub habitat (Appendix C). Grassland, ponderosa pine and pine woodland habitats yielded three species each.

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APPENDIX A
BIRDS IDENTIFIED ON THE MOORHEAD STUDY AREA

Common Name	Species	Breeding Evidence	Habitat and Number of Observations
Pied-billed Grebe	*Podilymbus podiceps*	No RS (1)	(1)
Mallard	*Anas platyrhynchos*	Yes RS (8)	8
Gadwall	*Anas strepera*	No	(1)
Pintail	*Anas acuta*	No	(1)
Cinnamon Teal	*Anas cyanoptera*	Yes RS (2)	(2)
Blue-winged Teal	*Anas discors*	Yes	(1)
American Widgeon	*Mareca americana*	Yes	(1)
Shoveler	*Spatula clypeata*	Yes	(1)
Bufflehead	*Bucephala albeola*	No	(1)
Turkey Vulture	*Cathartes aura*	No G (1)	(1)
Red-tailed Hawk	*Buteo jamaicensis*	No G(1)PP(1)CB(1)	(3)
Swainson's Hawk	*Buteo swainsoni*	No G (2)	(2)
Rough-legged Hawk	*Buteo lagopus*	No PW(1)G(1)AG(1)SB(1)	(7)
Golden Eagle	*Aguila chrysaetos*	No G(7)PP(3)CB(1)PW(1)	(12)
Bald Eagle	*Haliaeetus leucocephalus*	No G(3) PA(1)	(4)
Marsh Hawk	*Circus cyaneus*	No CB(5)G(1)PW(2)	(8)
Prairie Falcon	*Falco mexicanus*	No AG(1)G(2)PP(1)PW(1)	(5)
American Kestrel	*Falco sparverius*	No G(1)CB(2)AG(1)	(4)
Sharp-tailed Grouse	*Pediocetes phasianellus*	Yes CB(1)AG(3) G(6)SB(5)PP(1)PW	(17) (1)
Sage Grouse	*Centrocercus urophasianus*	Yes SB(2)G(1)AG(1)	(4)
Ring-necked Pheasant	*Phasianus colchicus*	Yes CB(17)AG(13) PW(1) SB(1)	(60)
Gray Partridge	*Perdix perdix*	Yes G(1)AG(2)	(3)
Turkey	*Meleagris gallopavo*	Yes PP(1)AG(1)	(2)
American Coot	*Fulica americana*	No RS(3)	(3)
Killdeer	*Charadrius vociferous*	Yes	(5)
Common Snipe	*Capella gallinago*	No	(1)
Upland Sandpiper	*Bartramia longicauda*	No G(1)	(1)
Wilson's Phalarope	*Steganopus tricolor*	No	(1)
Rock Dove	*Columba livia*	No AG(4)	(4)
Mourning Dove	*Zenaidura macroura*	Yes	(33)
Yellow-billed Cucko	*Coccyzus americanus*	No CB(2)	(2)
Great Horned Owl	*Bubo virginianus*	No PP(1)	(1)
Common Nighthawk	*Chordeiles minor*	No RS(1)	(1)
Belted Kingfisher	*Megaceryle alcyon*	No CB(1)	(1)
Common Flicker	*Colaptes auratus*	No PP(3)	(4)
Red-headed Woodpecker	*Melanerpes erythrocephalus*	No PP(1)	(1)
Hairy Woodpecker	*Dendrocopos villosus*	No CB(1)	(1)
Eastern Kingbird	*Tyrannus tyrannus*	Yes	(3)
Western Kingbird	*Tyrannus verticalis*	Yes	(2)
Cassins Kingbird	*Tyrannus vociferans*	No	(1)
Dusky Flycatcher	*Empidonax oberholseri*	No PP(1)	(1)
Western Wood Pewee	*Contopus sordidulus*	No CB(1)	(1)
Horned Lark	*Eremophila alpestris*	No AG(4)G(2)	(8)
Tree Swallow	*Iridoprocne biocolor*	No CB(1)	(1)
Bank Swallow	*Riparia riparia*	No CB(1)	(1)
Barn Swallow	*Hirundo rustica*	Yes RS(1) CB(1)	(2)
Cliff Swallow	*Petrochelidon pyrrhonota*	No CB(1)	(1)

APPENDIX A (cont.)

Common Name	Species	Breeding Evidence	Habitat and Number of Observations
Black-billed Magpie	*Pica pica*	No SB(1)G(1)AG(1)	(6)
Common Crow	*Corvus brachyrhynchos*	No AG(1)PP(1)	(2)
Pinon Jay	*Gymnorhinus cyanocephala*	No PP(2)	(2)
Black-capped Chickadee	*Parus atricapillus*	No PP(1)	(1)
Red-Breasted Nuthatch	*Sitta canadensis*	No CB(1)	(1)
Pygmy Nuthatch	*Sitta pygmaea*	No PP(1)	(1)
House Wren	*Troglodytes aedon*	Yes CB(5)	(5)
Gray Catbird	*Dumetella carolinensis*	No CB(1)	(1)
Brown Thrasher	*Toxostoma rufum*	No CB(2)	(2)
American Robin	*Turdus migratorius*	Yes	(6)
Mountain Bluebird	*Sialia currucoides*	Yes PP(3)	(3)
Loggerhead Shrike	*Lanius ludovicianus*	No PP(2)	(2)
Starling	*Sturnus vulgaris*	No AG(2)	(4)
Solitary Vireo	*Vireo solitarius*	Yes PP(1)	(1)
Yellow Warbler	*Dendroica petechia*	Yes CB(3)	(3)
Common Yellowthroat	*Geothlypis trichas*	No CB(1)	(1)
House Sparrow	*Passer domesticus*	No AG(3)	(3)
Western Meadowlark	*Sturnella neglecta*	Yes	(62)
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*	No RS(1)	(1)
Red-winged Blackbird	*Agelaius phoeniceus*	Yes CB, AG	(18)
Baltimore Oriole	*Icterus galbula*	No CB(2)	(2)
Brewer's Blackbird	*Euphagus cyanocephalus*	No AG, CB	(9)
Common Grackle	*Quiscalus quiscalus*	No	(2)
Brown-headed Cowbird	*Molothrus ater*	No AG(2)	(2)
American Goldfinch	*Spinus tristis*	Yes	
Red Crossbill	*Loxia curvirostra*	No PP(1)	(1)
Rufous-sided Towhee	*Pipilo erythrophthalmus*	Yes CB(2)	(2)
Lark Bunting	*Calamospiza melanocorys*	No	(1)
Vesper Sparrow	*Pooecetes gramineus*	No G(2)	(15)
Lark Sparrow	*Chondestes grammacus*	Yes PP(1)	(13)
Tree Sparrow	*Spizella arborea*	No CB(1) SB(1)	(2)
Chipping Sparrow	*Spizella passerina*	No PP(1) G(1)	(2)

Symbols

CB — Creek bottom
G — Grassland
PW — Pine woodland
AG — Agricultural land
PP — Ponderosa pine
SB — Sagebrush-shrub

APPENDIX B

SMALL MAMMAL SEASONAL TRAPPING RESULTS (171/9275 - 1.8%)

	Riparian	Grassland	Ponderosa Pine	Agricultural	Sagebrush	Pine Woodland
Fall	26/671 (3.9%)	5/681 (0.7%)	4/690 (0.6%)	44/300 (14.7%)	12/300 (4.0%)	1/300 (0.3%)
Spring	1/285 (0.4%)	0/300 (0%)	3/599 (0.5%)	3/300 (0%)	5/597 (0.8%)	0/0 —
Summer	7/668 (1.0%)	6/756 (0.8%)	13/747 (1.7%)	26/670 (3.9%)	10/748 (1.3%)	8/663 (1.2%)
TOTAL	4/1624 (2.1%)	11/1737 (0.6%)	20,2036 (1.0%)	70/1270 (5.5%)	27/164 (1.6%)	9/963 (0.9%)

APPENDIX C
TRAPPING RESULTS (9 MAMMAL SPECIES)

Riparian	Grassland	Ponderosa Pine	Agricultural	Sagebrush	Pine Woodland
Deer Mouse	Deer Mouse	Deer Mouse	Deer Mouse	Deer Mouse	Deer Mouse
	Northern Grasshopper Mouse		Western Harvest Mouse	Western Harvest Mouse	
Meadow Vole	Cottontail	Prairie Vole		Prairie Vole	Masked Shrew
		Least Chipmunk		13-lined Ground-Squirrel	Western Harvest Mouse

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